

Amendments to the Claims

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

Listing of Claims

1. - 3. (cancelled)

4. (currently amended) ~~The~~ A semiconductor integrated circuit chip, as described in the claim 3, formed as a plate-like semiconductor chip, comprising:

a circuit forming layer, on which a plurality of circuits are formed, being formed on one surface side of the plate-like semiconductor chip; and

a heat transfer layer, connected with the plate-like semiconductor chip in one body, being formed on another, opposing surface side of the plate-like semiconductor chip, and which comprises, in an inside thereof:

a closed flow passage;

an operating fluid hermetically enclosed within said closed flow passage; and

driving means of said operating fluid,

wherein said driving means of the operating fluid is made of means for giving vibration to said operating fluid which is hermetically enclosed within said closed flow passage,

wherein said heat transfer layer is made of a material similar to that of said semiconductor chip, and

wherein said the vibration giving means is made up with an includes a resistor layer.

5. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 4, wherein said resistor layer is disposed in a region where heat generation density is lower than an ~~averaged~~ average of heat generation density of said integrated circuit chip as a whole.

6. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 44, wherein said operating fluid is water.

7. (currently amended) The semiconductor integrated circuit chip, ~~as described in the claim 44, wherein said plate-like semiconductor chip is of such a chip, wherein includes~~ logic elements and memory elements which are formed separately within ~~the said one surface side surface thereof, on which the circuits are formed.~~

8. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 44, wherein the closed flow passages, ~~being formed passage in said heat transfer layer, are formed in a plural number thereof, along with one side of said semiconductor chip is configured as a plurality of closed flow passages at said another surface side of said semiconductor chip.~~

9. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 8, wherein each of ~~the said plurality of~~ closed flow passages ~~formed in the plural number thereof has the~~ has a separate said means for driving the operating fluid enclosed within an inside thereof, independently.

10. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 9, further comprising a ~~plural number~~ plurality of temperature detecting means which are provided within said semiconductor chip, wherein ~~said the plural number of driving means, which are provided independently for the plural closed flow passages, respectively, are controlled depending upon in dependence on~~ temperature detection outputs from said temperature detecting means.

11. (currently amended) The semiconductor integrated circuit chip, ~~as described in the~~ according to claim 8, further comprising ~~other plural~~

~~number of another closed flow passages~~ passage, being formed along with
~~either side of said semiconductor chip, crossing over the plural number of said~~
~~closed flow passages formed which is formed at a same surface side of said~~
~~semiconductor chip as said plurality of closed flow passages and crossing~~
~~over said plurality of closed flow passages.~~

12. (currently amended) The semiconductor integrated circuit chip,
~~as described in the according to~~ claim 11, wherein each of said plurality of
~~closed flow passages formed in the plural number thereof has~~ has a separate
said means for driving the operating fluid enclosed within an inside thereof,
independently.

13. (currently amended) The semiconductor integrated circuit chip,
~~as described in the according to~~ claim 12, further comprising a plural number
plurality of temperature detecting means which are provided within said
semiconductor chip, wherein ~~said the plural number of driving means, which~~
are provided ~~independently for the plural closed flow passages, respectively,~~
are controlled depending upon in dependence on temperature detection
outputs from said temperature detecting means.

14. (currently amended) A semiconductor integrated circuit chip,
comprising:

a plate-like semiconductor chip;

a circuit forming layer, ~~being formed on one side surface of said~~
~~plate like semiconductor chip, on which a plurality plural number of circuits are~~
formed, being formed on one surface side of said plate-like semiconductor
chip; and

a heat transfer layer, being formed on ~~other side another~~ surface
~~opposing side of the plate-like semiconductor chip, opposite to the surface~~
~~side surface on which said circuit forming layer is formed and connected~~
therewith in one body, for suppressing a local increase of temperature caused
~~due to by~~ heat generation of ~~the circuit circuits~~ within said circuit forming layer
of said semiconductor chip, ~~being connected therewith in one body, said heat~~
transfer layer comprising;

a closed flow passage;

an operating fluid hermetically enclosed within said closed flow passage; and

driving means of said operating fluid,

wherein said driving means of the operating fluid is made of means for giving vibration to said operating fluid which is hermetically enclosed within said closed flow passage,

wherein said heat transfer layer is made of a material similar to that of said semiconductor chip, which comprises, in an inside thereof, and

wherein the vibration giving means includes a resistor layer.

15. (withdrawn) A semiconductor integrated circuit device, comprising:

a semiconductor integrated circuit chip, in a part of which are formed circuits in a plural number thereof;

a mounting board, in a part of which are formed wiring patterns, for mounting said integrated circuit chip thereon;

a case for receiving said mounting board, on which said integrated circuit board is mounted, in an inside thereof; and

a plural number of terminals, being planted outside from said case or said mounting board, and being electrically connected to the circuits formed on said semiconductor integrated circuit chip, wherein said semiconductor integrated circuit chip is such the semiconductor integrated circuit chip as described in the claim 1.

16. (withdrawn) The semiconductor integrated circuit device, as described in the claim 15, further comprising a heat sink, being attached on a part of an outer surface of said case.

17. (withdrawn) The semiconductor integrated circuit device, as described in the claim 15, wherein the electric power to be supplied to said driving means, which is formed in said heat transfer layer of said semiconductor integrated circuit chip, is a part of the electric power to be supplied to said semiconductor integrated circuit chip through said terminals of said semiconductor integrated circuit device.

18. (withdrawn) A semiconductor integrated circuit device, comprising:

a semiconductor integrated circuit chip, in a part of which are formed circuits in a plural number thereof;

a mounting board, in a part of which are formed wiring patterns, for mounting said integrated circuit chip thereon;

a case for receiving said mounting board, on which said integrated circuit board is mounted, in an inside thereof; and

a plural number of terminals, being planted outside from said case or said mounting board, and being electrically connected to the circuits formed on said semiconductor integrated circuit chip, wherein said semiconductor integrated circuit chip is such the semiconductor integrated circuit chip as described in the claim 14.

19. (withdrawn) The semiconductor integrated circuit device, as described in the claim 18, further comprising a heat sink, being attached on a part of an outer surface of said case.

20. (withdrawn) The semiconductor integrated circuit device, as described in the claim 18, wherein the electric power to be supplied to said driving means, which is formed in said heat transfer layer of said semiconductor integrated circuit chip, is a part of the electric power to be supplied to said semiconductor integrated circuit chip through said terminals of said semiconductor integrated circuit device.

21. (new) The semiconductor integrated circuit chip according to claim 4, wherein both said plate-like semiconductor chip and said heat

transfer layer are made of a material of silicon.